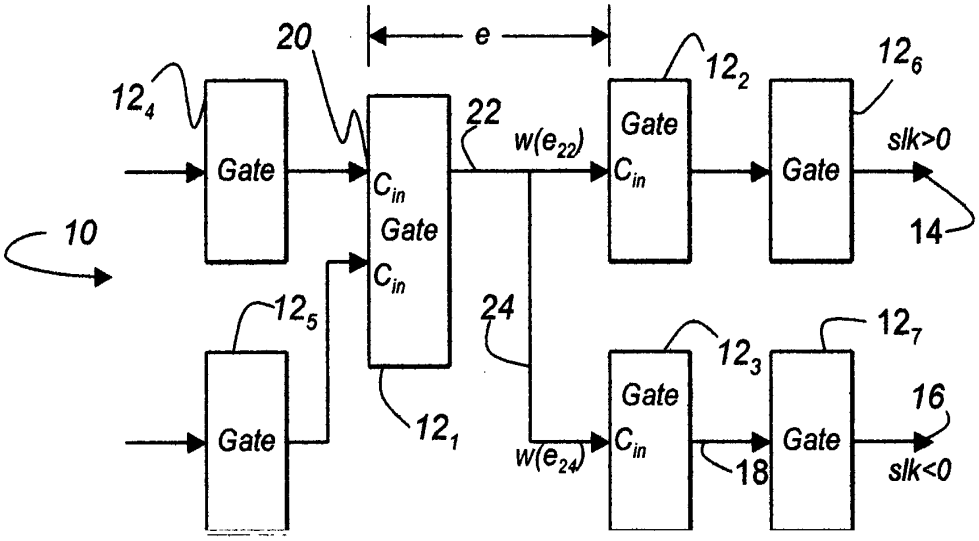

Fig. 1 (Prior Art)

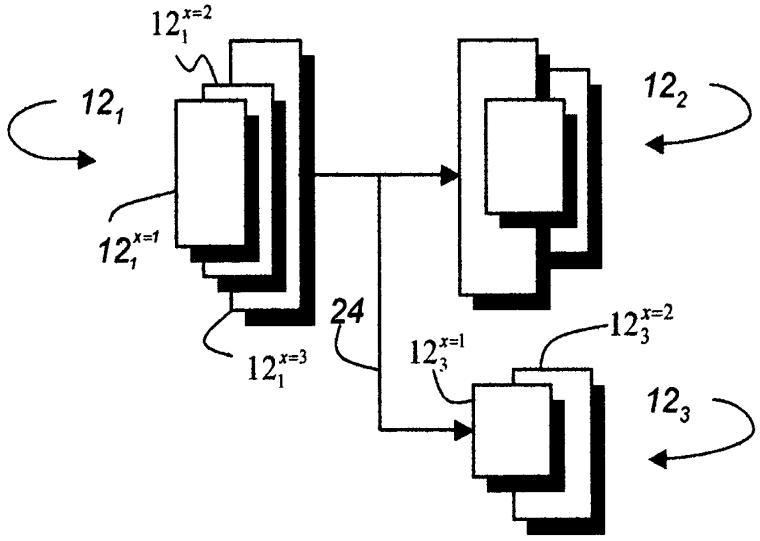

Fig. 2 (Prior Art)

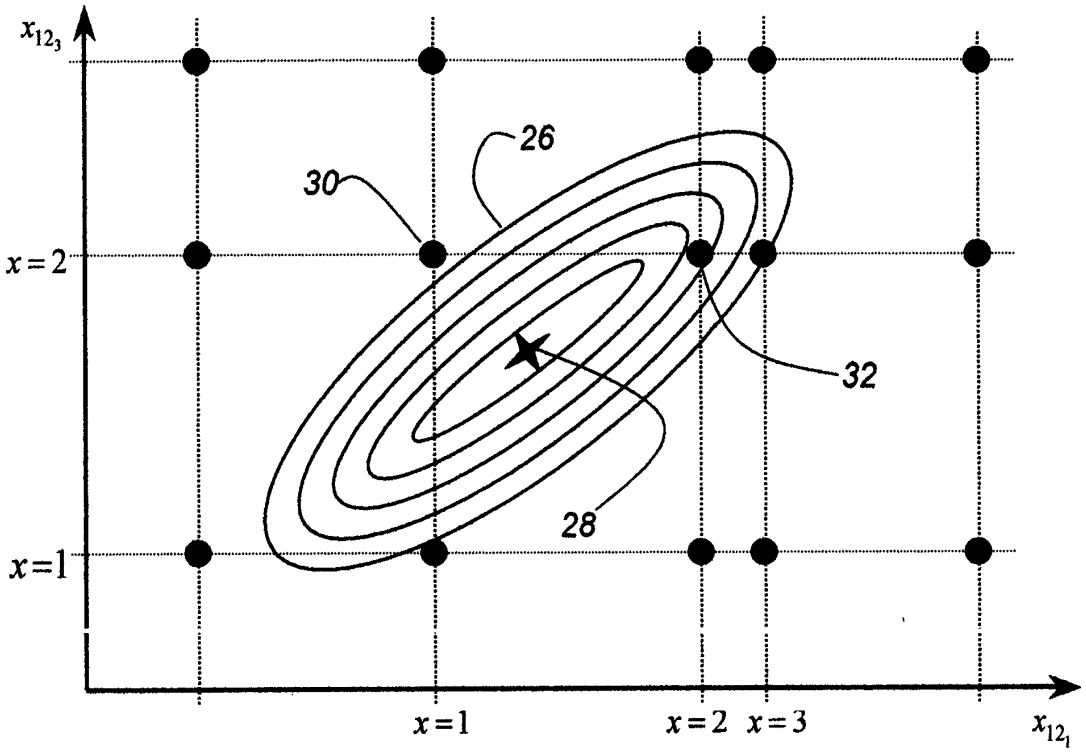

Fig. 3 (Prior Art)

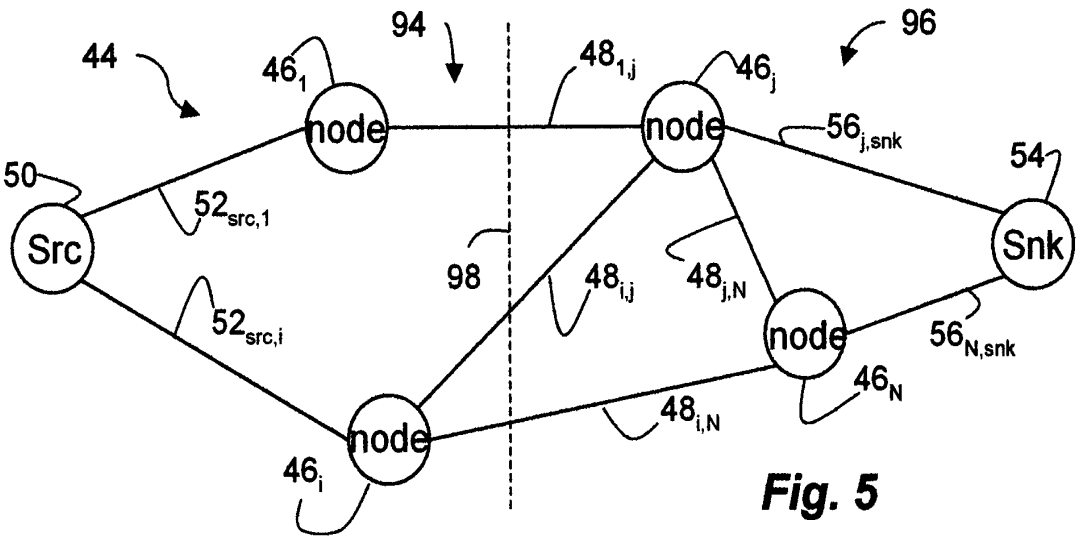

Fig. 5

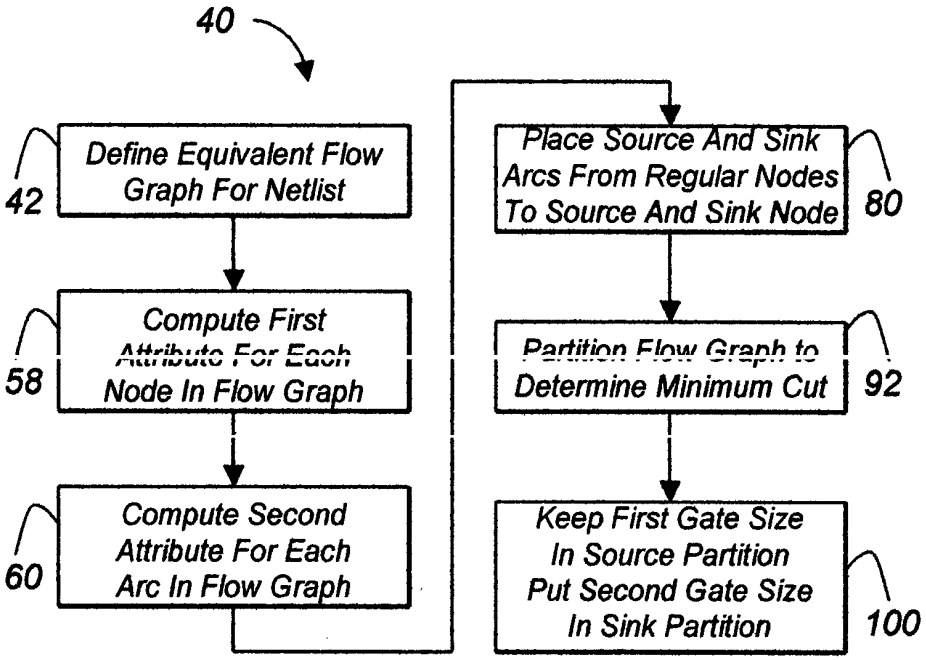
40
Define Equivalent Flow Graph For Netlist
42
Compute First Attribute For Each Node In Flow Graph
58
Compute Second Attribute For Each Arc In Flow Graph
60
Place Source And Sink Arcs From Regular Nodes To Source And Sink Node
80
Partition Flow Graph to Determine Minimum Cut
92
Keep First Gate Size In Source Partition Put Second Gate Size In Sink Partition
100

Fig. 4

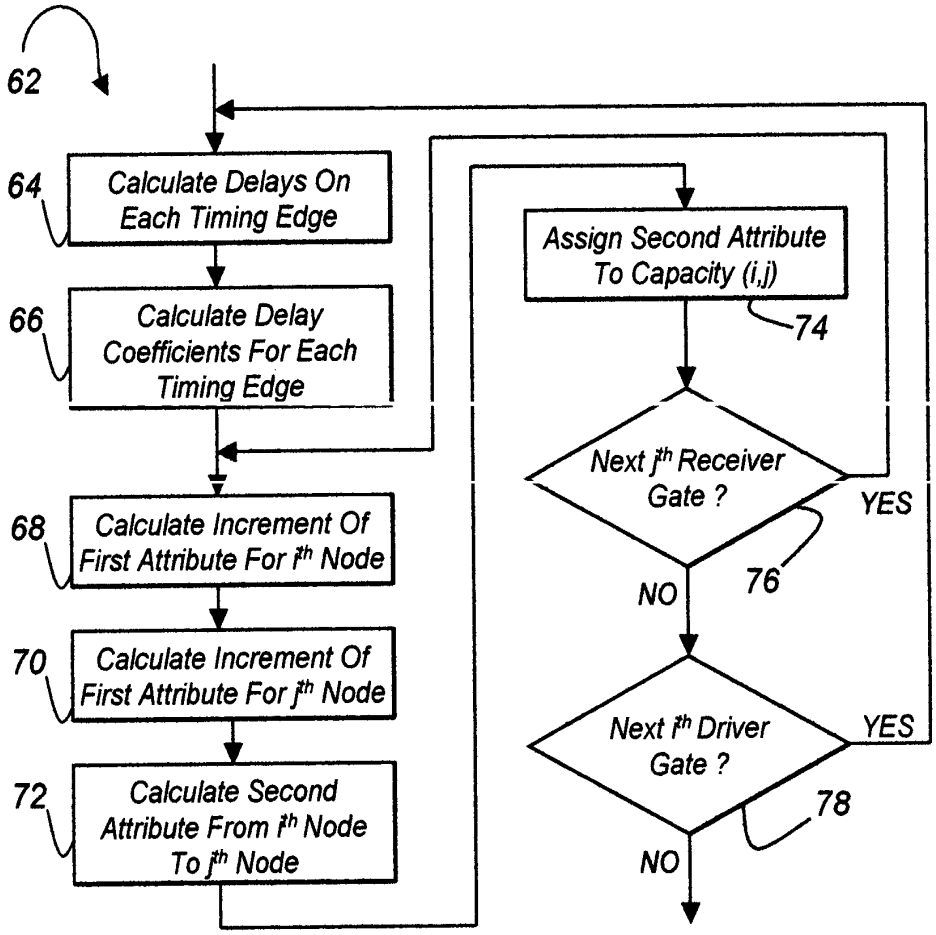
62
64
Calculate Delays On Each Timing Edge
66
Calculate Delay Coefficients For Each Timing Edge
68
Calculate Increment Of First Attribute For i^{th} Node
70
Calculate Increment Of First Attribute For j^{th} Node
72
Calculate Second Attribute From i^{th} Node To j^{th} Node
Assign Second Attribute To Capacity (i,j)
74
Next j^{th} Receiver Gate ?
YES
76
NO
Next i^{th} Driver Gate ?
YES
78
NO

Fig. 6

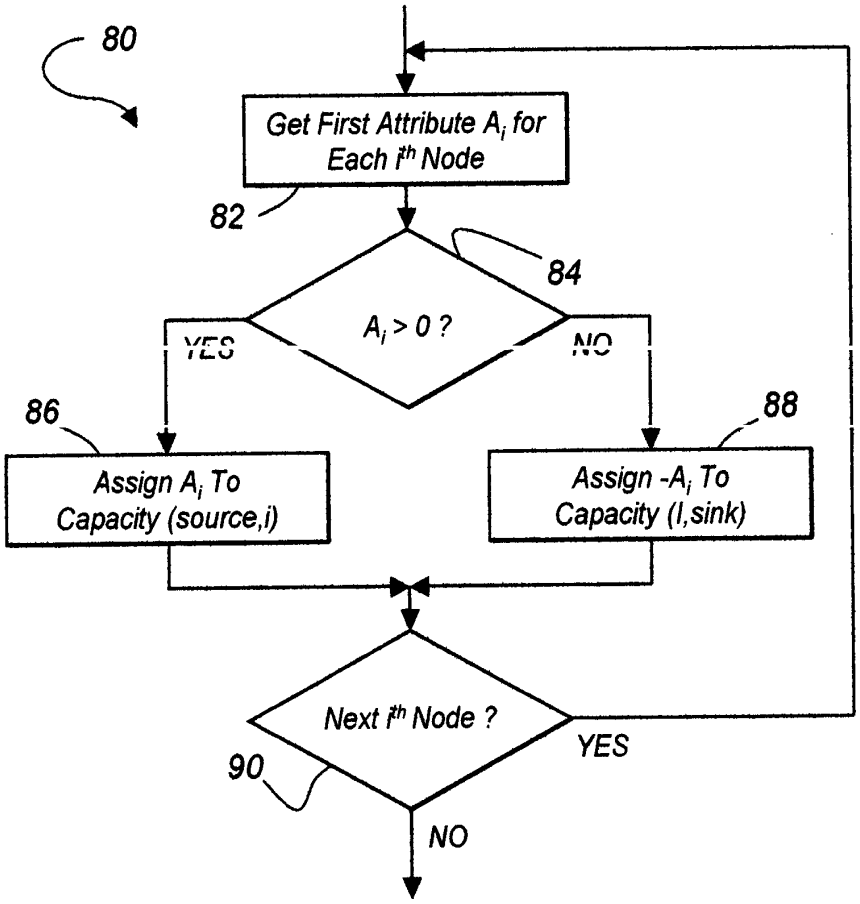
80
Get First Attribute A_i for Each i^{th} Node
82
84
$A_i > 0$?
YES
NO
86
88
Assign A_i To Capacity (source,i)
Assign $-A_i$ To Capacity (I,sink)
Next i^{th} Node ?
YES
90
NO

Fig. 7

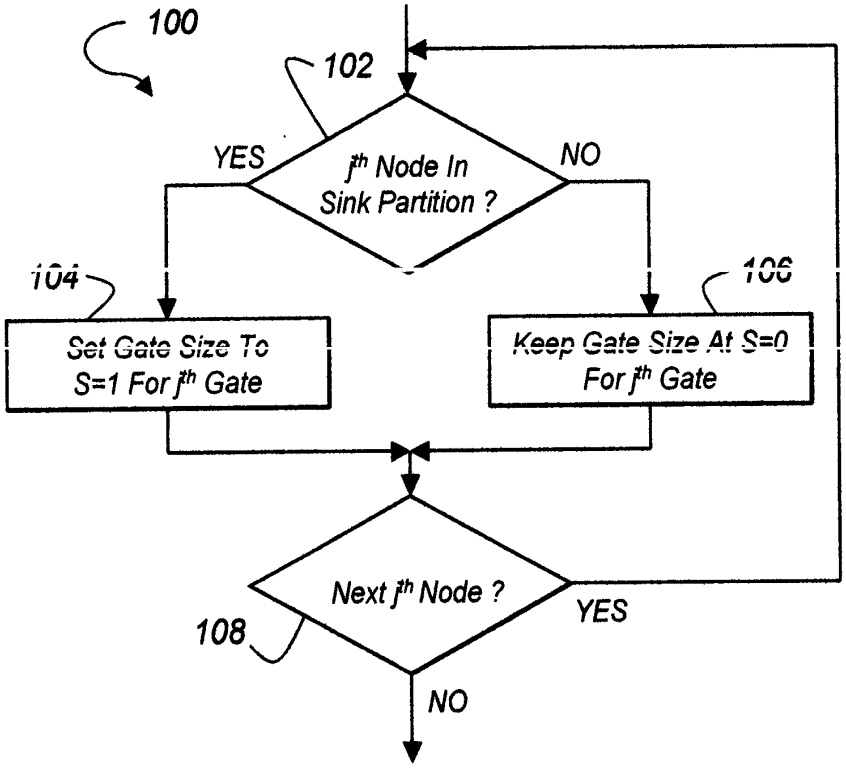
100
102
YES
j^{th} Node In Sink Partition ?
NO
104
106
Set Gate Size To S=1 For j^{th} Gate
Keep Gate Size At S=0 For j^{th} Gate
Next j^{th} Node ?
YES
108
NO

Fig. 8

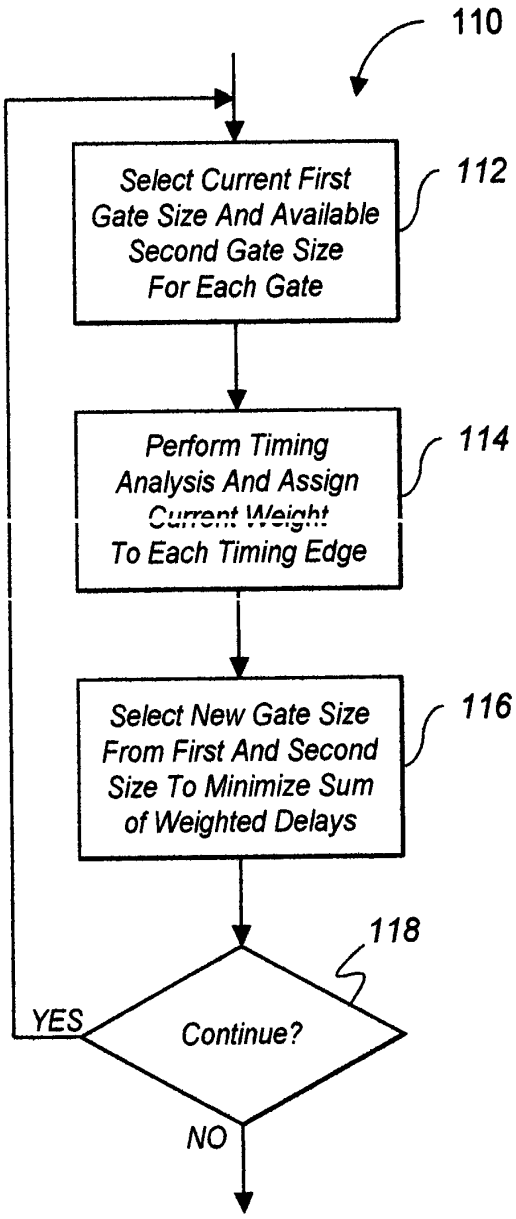
110
Select Current First Gate Size And Available Second Gate Size For Each Gate
112
Perform Timing Analysis And Assign Current Weight To Each Timing Edge
114
Select New Gate Size From First And Second Size To Minimize Sum of Weighted Delays
116
118
Continue?
YES
NO

Fig. 9

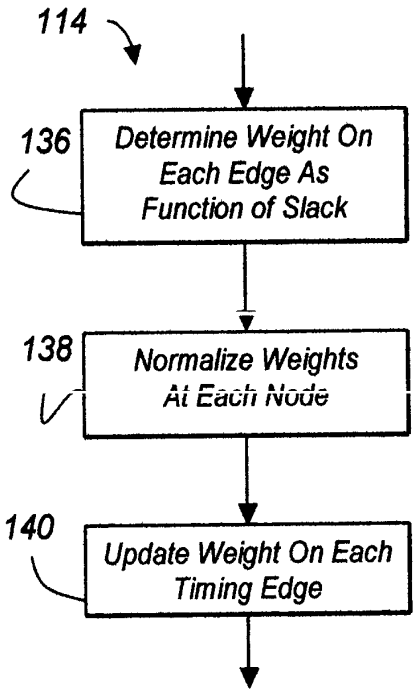
114
136
Determine Weight On Each Edge As Function of Slack
138
Normalize Weights At Each Node
140
Update Weight On Each Timing Edge

Fig. 11

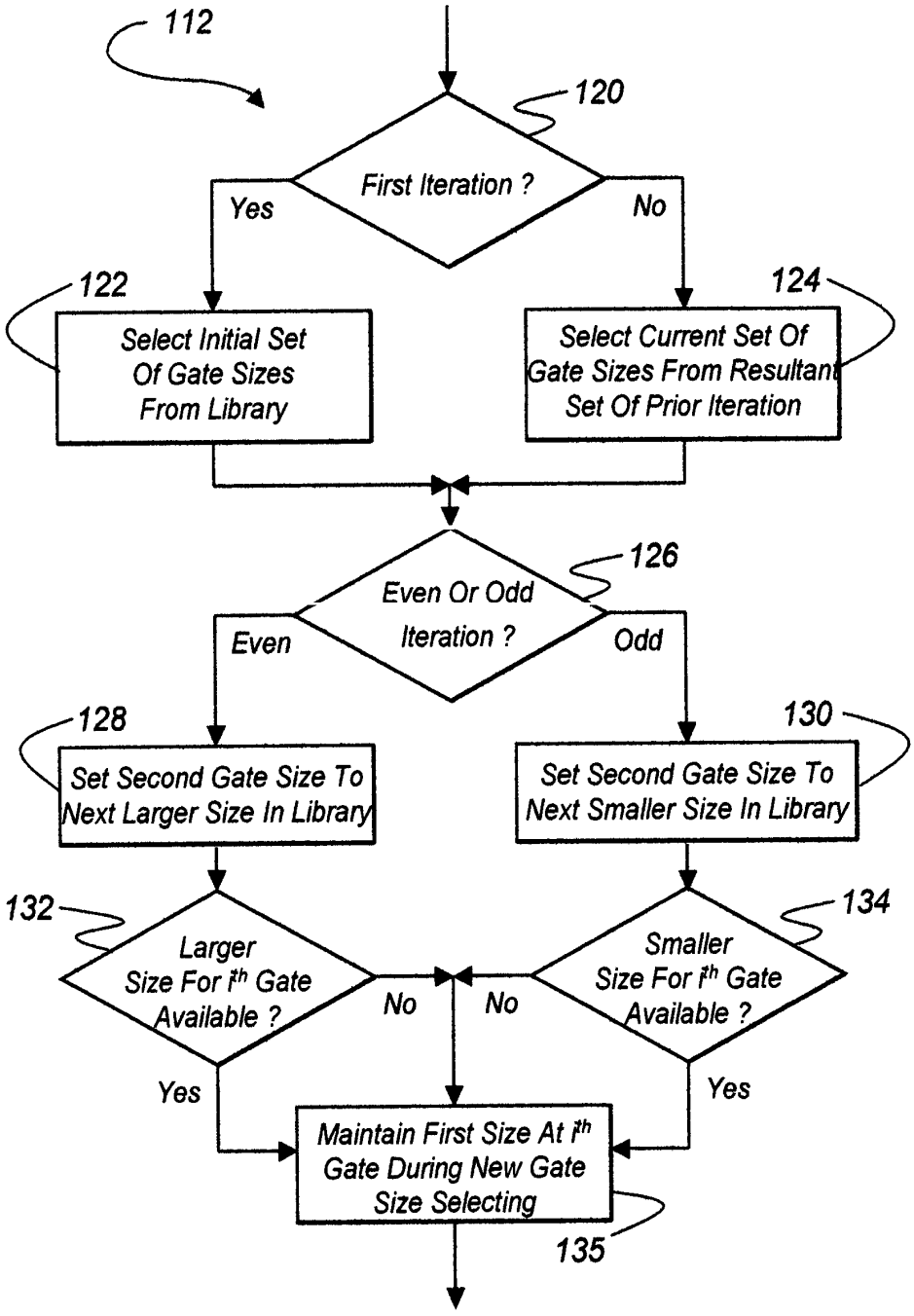
112
120
First Iteration ?
Yes
No
122
Select Initial Set Of Gate Sizes From Library
124
Select Current Set Of Gate Sizes From Resultant Set Of Prior Iteration
126
Even Or Odd Iteration ?
Even
Odd
128
Set Second Gate Size To Next Larger Size In Library
130
Set Second Gate Size To Next Smaller Size In Library
132
Larger Size For ith Gate Available ?
134
Smaller Size For ith Gate Available ?
No
No
Yes
Yes
Maintain First Size At ith Gate During New Gate Size Selecting
135

Fig. 10